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INTERPRETIVE IS EVALUATION: SITUATED NETWORKS OF KNOWLEDGE

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Abstract

The increasing concern that Information Systems (IS) are not delivering anticipated value and benefits is demonstrated by the continuing strive for improved methods for assessing returns. In this paper the authors suggest that the improvement lies in better understanding the experiences and tacit knowledge of multiple IS stakeholders and not in quantitative evaluation methods. Using previous case material and current literature in IS evaluation, the authors argue that IS evaluation is a highly complex social process, where context is all-important. The authors contend that an interpretive approach to IS evaluation can play a key role and help understand the complexity surrounding this area. What is problematic is the articulation and subsequent dissemination of the tacit knowledge amongst IS users which is required to facilitate greater understanding of the evaluation process. The paper argues that this problem can be addressed by the adoption of a more active role for the social actors in the situation, together with the exploitation of knowledge-based technologies. This approach will improve interpretive evaluation by promoting a culture of articulation, collaboration and knowledge sharing.

Keywords: IS evaluation, situated practice, interpretive research, hermeneutics, intelligent agents

Introduction

Current research indicates that the significant global expenditure on IS is increasing and that organisations will continue to invest heavily in IS (Willcocks and Lester, 1999). However, against this trend, there is widespread concern that investment in IS does not always deliver value and that many IS projects do not meet business objectives (Walsham, 1999). This phenomenon has been labelled the 'IS productivity paradox' (Brynjolfsson, 1993). In addition, many IS investments appear to go ahead without the use of formal investment appraisal techniques, which results in organisations having no process to evaluate the desired outcome and difficulty in understanding both the impact and implications of the IS implementation (Remenyi *et al*, 2000). When methods are used there is widespread disagreement over their usefulness and over which model to adopt (Hirschheim and Smithson, 1999).

Against this backdrop, this paper begins with a brief summary of IS evaluation and contends that formal, traditional, mechanistic approaches to IS evaluation, when employed, have failed to satisfy the concerns of senior executives. Using early empirical work, the authors argue that a complementary, interpretive IS evaluation approach based upon hermeneutics and situated action should be considered by organisations. The paper argues that practical difficulties with regard to undertaking interpretive studies could be alleviated using knowledge-based tools. Finally, the paper concludes with a call for organisations to review their current evaluation processes.

Information Systems Evaluation

There is an ever-increasing demand for organisations to become more efficient and effective. To assist with this process organisations have invested heavily in IS (Willcocks, 1999). However, according to Willcocks and Lester (1999) "despite the massive accumulated and rising investment in information technology, on the whole these have not contributed to significant rises in productivity". The sheer size of IS expenditure, its pervasiveness in everyday organisational and domestic life, and the uncertainty of its value, has led to growing concern, especially amongst top executives, about the casual approach to extremely high levels of investment (Powell, 1999).

Many organisations do not evaluate IS and consequently do not measure the outcome of IS implementations (Willcocks, 1999). IS evaluation therefore, has not been given a high level of importance in organisations, and indeed is often overlooked (Willcocks and Lester, 1999). Walsham (1999) maintains that where organisations have evaluated IS, attention has been given to formal, overt, quantitative methods that attempt to define and measure IS investment, value and benefit. Irani (1998) has classified over fifty formal IS appraisal models. These include techniques such as Cost Benefit Analysis (CBA), Return On Investment (ROI) and Payback, which are based upon economics (Remenyi *et al.*, 2000). These methods are usually employed by IS professionals, and other non-user stakeholders such as functional management, company accountants, management consultants and IS suppliers (Walsham, 1999).

Formal IS evaluation, when employed, is conducted via formally documented and often mechanistic quantitative processes (Serafeimidis and Smithson, 2000). In addition, the implementation and operation of the IS is monitored and measured in terms of broad costs, technical aspects and perceived, accrued benefits (Hirschheim and Smithson, 1999). It would appear that such formal evaluation approaches have considerable legitimacy. Indeed, there appears to be a continuous striving from academics and practitioners to develop and adopt better positivist, mechanistic methods to improve the situation. Recent contributions include the IT Scorecard (Willcocks, Graeser and Pisanias, 1998), based upon the Balanced Scorecard (Kaplan and Norton, 1992).

Walsham (1999) however, contends that the process of IS evaluation is extremely complex and difficult. Further, that formal, prescriptive evaluation is of little value and that it is more likely to be a symbolic expression of objective and accountable management, to perpetuate an image of the rational manager, than an accurate method to aid decision-makers. Willcocks and Lester (1999) further argue that even when formal evaluation processes are in place, these processes are often not undertaken rigorously, and may even be ignored. Stakeholders cite various reasons, including it is not necessary, it is too difficult, it is too time-consuming and it is too costly (Jones and Hughes, 2000). Formal evaluation therefore, would appear to be ritualistic rather than substantive and whilst formal approaches have met with limited success, the degree to which these methods are useful is cause for much current debate (Strassman, 1997; Walsham, 1999).

Situated IS Evaluation

Many authors (Walsham, 1995; Hirschheim and Smithson, 1999; Serafeimidis and Smithson, 2000; Irani and Love, 2001) have argued that IS evaluation would be improved by using an interpretive epistemology. The emerging view from this paradigm is that social actors are important and that IS evaluation is a socially-embedded process in which formal procedures entwine with the informal assessments by which actors make sense of their situation. This leads to the view that these actors are in the best position to assess IS, offer opinion and persuade senior executives of the value of the IS. Also emerging are interpretive methods of IS research (Walsham, 1993; Butler, 1998; Klein and Myers, 1999), based upon hermeneutics (Heidegger, 1976), aimed at understanding the subtleties of the social, contextual, situated and dynamic world in which IS is implemented. Hermeneutics is both an underlying philosophy and a specific mode of analysis. It is a philosophical approach to human understanding, which is concerned with meaning and provides a philosophical grounding for interpretivism. The interpretation aims to bring an underlying coherence or sense to a situation (Introna, 1997) and is the work of thought to decipher meanings. These meanings are socially and experientially based, local and specific in nature, and dependent on their form and content on the individual person or groups holding the constructions. The social world is, therefore, composed of a network of interrelations which are generated by actors' goals and objectives in the course of their existence and where context plays a key role (Introna, 1997).

Traditional IS evaluation methods tend to overlook the fact that people are active makers of their real-world reality. Individuals have opinions and constantly evaluate artefacts, based on their knowledge, experience, background, understanding and intuition. These are not formal, overt, evaluation processes but informal, covert processes. Nonetheless, they have significant importance to the individuals and peer groups concerned. With regard to IS evaluation, these opinions must also be of major importance to an organisation, yet they are rarely, if at all, requested or valued (Serafeimidis and Smithson, 2000). Many IS observers (Mumford and Weir, 1979; Checkland, 1981; Walsham, 1993; Introna, 1997; Hirschheim and Smithson, 1999; Irani *et al.*, 2001) have argued that IS are predominantly social systems and therefore, the social aspects are significant. These social actors are therefore, in the best position to assess IS, not detached accountants, IS practitioners and managers.

A summary of the prevailing view of situated evaluation is summarised in table 1 below:

Table 1. Characteristics of Situated IS Evaluation

Concern for evaluation in practice
Interpretive approach
Covert non-documented process
Social factors dominate
Engages in process
Promotes subjective views
Recognises political process
Stakeholder view of process

Hirschheim and Smithson (1999) argue that adopting a more interpretive, situated, hermeneutic approach is an appropriate vehicle for undertaking and understanding IS evaluation. This has previously been investigated by the authors in earlier case study research (Jones and Hughes, 2000), using Grounded Theory (Glaser and Strauss, 1967) as the research methodology in an interpretivist paradigm. The research work concluded that informal, situated, hermeneutic evaluation occurs within the IS user community. Further, IS practitioners in the case study organisation acknowledged that this perspective was currently being overlooked, but should be both requested and valued.

The case study also demonstrated that IS stakeholders in practice were not concerned with the specifics of IS assessment metrics, detailed benefit measurement formulae, evaluation concepts or cost benefit analysis techniques. They were concerned about successful introduction, operation and effect of IS systems and issues which must be considered and addressed to ensure organisations obtain maximum value from the implementation of new technology. IS practitioners in the case study also acknowledged that improving matters may lie, not with the development of better quantitative methods, but rather in the experiences of multiple IS stakeholders. Furthermore, they were well aware that practical elaboration of the evaluation is predominantly grounded in tacit knowledge.

Analysis of these opinions leads to an understanding of IS via 'situated' IS evaluation, where evaluation is a local, embodied, emergent and contingent process, and one which remains 'open' in the light of future events. To help alleviate these issues, a new role could be created for an independent, neutral, IS business and evaluation professional to conduct interpretive IS evaluation studies. Given the levels of IS expenditure currently being experienced and the potential impact of IS, this is perhaps not an extravagant use of resources.

Key lessons and findings from the earlier case study are summarised in table 2 below:

Table 2. Lessons for Understanding Situated IS Evaluation

Lesson 1	Organisations must question the underlying assumptions of existing IS evaluation methods and seek alternative perspectives where these methods fail to achieve desired objectives and outcomes.
Lesson 2	IS evaluation must have an explicit concern for the social context and interpretive methods must be adopted which explicitly situate stakeholders at the centre of the evaluation process.
Lesson 3	The views, beliefs and assumptions of stakeholders must be exposed and considered within the IS evaluation process and not be ephemeral to it.
Lesson 4	Organisations must have an interpretive benefits management approach to complement the IS development, project management and implementation functions.
Lesson 5	A new role must be created for an IS evaluation professional to facilitate and conduct interpretive IS evaluation studies.
Lesson 6	The hierarchical and political nature of public sector organisations creates a barrier to change and this must be overcome to ensure interpretive approaches are successful in practice.

Situated Networks of Knowledge

One of the major issues associated with interpretive IS evaluation is the articulation, documentation and interpretation of stakeholder views (Serafeimidis and Smithson, 2000). People create social organisations to address problems, which go beyond

their individual capacity to solve them (Kuhlthau, 1991). In organisational settings there is a growing recognition of the need to encourage and support collaborative problem-solving activities, hence the growing interest in knowledge management tools and techniques (Nonaka and Takeuchi, 1995; Skryme, 1999). In a recent survey, KPMG estimated that over 90% of an organisation's intellectual assets are not in electronic form (Parlby, 1998). This valuable information source, including interpretive perspectives on IS evaluation, is held by social actors and is frequently referred to as tacit knowledge (Stewart, 1997). The exploitation of tacit knowledge is a collaborative process whereby individuals learn from knowledgeable peers (Twidale *et al*, 1997).

Electronic mechanisms do exist which support information retrieval and user collaboration to some degree. However, most computerised knowledge management products rely on the user having well-defined search criteria in order to elicit knowledge from the various electronic repositories in which it is held. Additionally, they have limited collaborative functionality and do not encourage serendipitous information discovery. Such systems also require the tacit knowledge giver to be able to clearly articulate their knowledge and experiences. These products therefore, have significant limitations with regard to use with interpretive IS evaluation approaches (Stewart, 1997).

There are however, emerging products that ensure that information is stored in such a way that it is retrievable when imprecise search terms are presented. Furthermore, these products support user collaboration by facilitating the identification of users who have searched using similar criteria previously. Information management techniques are employed to facilitate access to, and collaborative reusability of, information. An agent-based model consisting of a set of co-operating agents provides both a technical and psychological solution. Technically, the agents will manage user interests, search for relevant information and provide a uniform interface to disparate data. Psychologically, the agents will adopt the role of facilitator by proactively introducing users with similar interests and proposing additional interest areas. By employing a co-operating, agents approach, alternative user views will automatically be included in searches allowing cross-referencing of search criteria. Furthermore, initial results can be augmented with additional, system proposed, search criteria to incrementally refine the information retrieval process (Berney and Ferneley, 1999).

An agent-based solution of this nature would allow users to define *spheres of interest*, assigning specific agents to each user-defined sphere. User agents collaborate to find other users with similar interests, augmenting their user profiles with additional information. By a process of query reformulation and relevance feedback, the user trains their agent so that it evolves into an increasingly accurate representation of the user's knowledge. This is both the knowledge each stakeholder has about a particular project and the knowledge that is created by the interaction between stakeholders. This is held in a form that promotes re-use to enable stakeholders to capitalise on the potential for creating knowledge.

Interpretivist research is characterised by the philosophy that knowledge of reality is gained only through social construction and, at a practical level, it focuses on the complexity of human sense-making as situations emerge. Interpretive IS evaluation can provide deep insight into this phenomenon (Serafeimidis and Smithson, 2000). The introduction of situated IS evaluation brings with it the problem of articulation and analysis of user perspectives. However, the adoption of sufficiently advanced agent-based collaborative tools will greatly assist with the process. They can identify key motivators for tacit knowledge provision and dissemination, and facilitate user collaboration, which considers both previous information use and user experience. Such modelling techniques are able to represent both the structured *organisational* type of knowledge and the more tacit *user* knowledge. The tools can also support user collaboration and proactively recommend knowledge sources based on user profiles and spheres of interest.

Prior to the introduction of technology to facilitate collaboration, an appropriate organisational culture must be in place to make the use of the technology effective (Skryme, 1999). It is important to note that the ill-considered introduction of technology has been identified as a barrier to information exchange processes, hampering social interaction, hindering initiative and creativity (Mantovani, 1996; Kautz *et al*, 1997). It will therefore be important to establish an appropriate cultural framework for collaborative knowledge elicitation, representation and dissemination amongst the various stakeholders. The authors argue that a better understanding of the motivating factors which influence knowledge sharing and re-use is required to best achieve the facilitation of tacit knowledge extraction, storage and dissemination among IS evaluation stakeholders. The authors argue that establishing this cultural framework appears to be the major challenge to organisations undertaking interpretive IS evaluation.

Conclusion

Many organisations do not evaluate IS investments. Where IS evaluation is undertaken, formal, positivist, mechanistic methods are predominately employed. Where these methods are used, there is disagreement over their usefulness and over which model to adopt. There is currently dissatisfaction with these methods because they have failed to satisfy the concerns of senior executives.

In this paper the authors have argued that there is no formal model, method or template that can be applied to IS evaluation. Further, that IS evaluation is not a static event, based upon grand design, but rather it is a continual process, based upon experiential and subjective situated judgement which occurs, in context, in the IS user community. The case study demonstrates that this situated, user evaluation does indeed occur. It is this judgement that is of paramount importance to IS practitioners, and ultimately, top executives. Interpretive IS evaluation therefore, can help to overcome weaknesses within the prevailing mechanistic paradigm. However, the case study demonstrates that this perspective is not currently requested or valued.

A major problem for an organisation adopting this approach is the articulation and dissemination of information, knowledge and user perspectives, together with the subsequent interpretive analysis. This is a key issue, which is confirmed in the case study. The authors suggest that this can be more easily achieved by the use of knowledge-based collaborative software tools for knowledge sharing and re-use and by encouraging adoption of suitable supporting methods and procedures. Further research is required in this area and the author's future work will explore how this can be achieved in practice.

To conclude, IS literature and the author's initial empirical research indicates that undertaking IS evaluation is a complex, multi-faceted, difficult, continual and essentially a social process. It is a subject, which traditionally has not been given significant attention, particularly in IS practice. Interpretive, situated IS evaluation occurs in the user community but to date this perspective has not been obtained or valued to any great degree. However, the adoption of appropriate knowledge-based tools will enable interpretive views to be more easily obtained, disseminated and analysed. With the growing disillusionment of top executives with both IS and traditional mechanistic IS evaluation methods, it is time for emerging interpretive approaches to play a key role.

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